Long-term Efficacy of Lower-Gastrointestinal Delivery Fecal Microbiota Transplantation for Recurrent *Clostridioides difficile* Infection

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BACKGROUND

- In the year 2017, there were 223,900 CDI cases in the United States resulting in 12,800 deaths.[1] The recurrence rate of CDI after first treatment ranges from 15-20% and increases to up to 60% after the first recurrence. It is estimated that one in six patients who get CDI will get a repeat infection within two to eight weeks following antibiotic treatment.[2]
- For those with recurrent CDI (rCDI) that have failed appropriate antibiotic regimens, guidelines recommend fecal microbiota transplantation (FMT) as a treatment option in addition to standard of care antibiotics (SOCp).[3,4]
- A retrospective study that investigated the effectiveness of FMT for the treatment of rCDI found that 82% of patients had sustained response at 22 months of follow-up.[2]
- Studies comparing the efficacy of FMT to SOCp are limited to short-term efficacy or exclude patients that are immunocompromised. To date, there are limited active comparator trials that assess the long-term efficacy of FMT for rCDI. [4,5,6]

TREATMENT SITE

- Tertiary acute care center, 519 bed community hospital. FMT treatment site using non-profit stool bank.

OBJECTIVE

- This IRB approved study aims to evaluate the long-term efficacy of lower-gastrointestinal (GI) delivery FMT for rCDI.

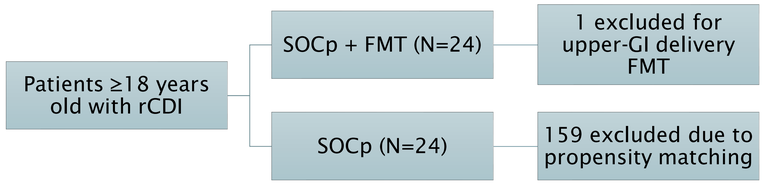
METHODS

- **Design**: Single-center, propensity-matched cohort study. Data obtained from retrospective chart review of patient medical records from January 2018-December 2020
- **Inclusion criteria:** ≥ 18 years old, rCDI
- **Exclusion criteria:** Upper-GI delivery FMT, pregnancy
- **Propensity matching criteria:**[7]
  - Antibiotic received for rCDI (fidaxomicin vs. vancomycin)
  - Immunocompromised status
  - Age (≥ 65 years vs. < 65 years)

STATISTICAL ANALYSIS

- To achieve an 80% power and based off a 10% recurrence rate in patients that receive FMT plus SOCp and a 50% recurrence rate in patients that receive SOCp alone, it was determined that 19 patients were required in each study arm to identify a 40% difference in the primary outcome of rCDI within 12 months.[8] A *P* value of < 0.05 was considered statistically significant.
- Nominal data was analyzed with chi-squared tests and continuous data was analyzed with Wilcoxon signed rank tests.

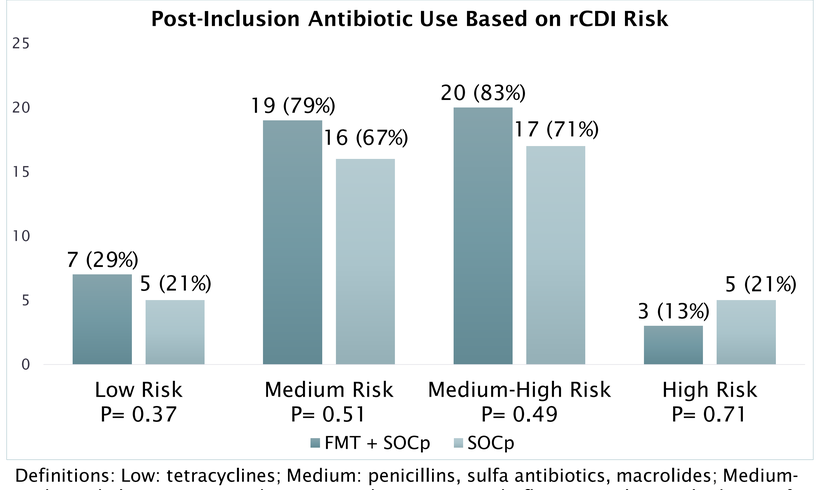
TREATMENT GROUPS



RESULTS

Baseline Characteristics	FMT + SOCp (N=24)	SOCp (N=24)	*P* value
Male, n (%)	6 (25)	8 (33)	0.53
Age (years), median (IQR)	75 (41-87)	70 (23-93)	0.10
Severe CDI, n (%)	3 (13)	9 (38)	0.05
Immunocompromised, n (%)	4 (17)	4 (17)	1.00
Gastroesophageal Reflux Disease, n (%)	14 (58)	7 (29)	0.08
Inflammatory Bowel Disease, n (%)	7 (29)	3 (12)	0.29
Antibiotic for rCDI			1.00
Fidaxomicin, n (%)	5 (21)	5 (21)	
Oral vancomycin, n (%)	19 (79)	19 (79)	

Outcome	FMT + SOCp (N=24)	SOCp (N=24)	*P* value
Primary			
rCDI within 12 months, n (%)	2 (8.3)	12 (50)	0.0001
Secondary			
rCDI within 6 months, n (%)	2 (8.3)	11 (46)	0.004
rCDI within 18 months, n (%)	2 (8.3)	12 (50)	0.002
rCDI within 24 months, n (%)	3 (13)	12 (50)	0.002
Time to rCDI, months, mean (SD)	15.5 (13.5)	1.5 (0.37)	0.03
All-cause mortality at 6 months, n (%)	3 (13)	2 (8)	0.84
All-cause mortality at 12 months, n (%)	3 (13)	3 (13)	1.00
All-cause mortality at 18 months, n (%)	3 (13)	4 (17)	0.25
All-cause mortality at 24 months, n (%)	4 (17)	5 (21)	0.81



Definitions: Low: tetracyclines; Medium: penicillins, sulfa antibiotics, macrolides; Medium-High: cephalosporins, monobactams, carbapenems; High: fluoroquinolones, clindamycin[9]

DISCUSSION

Strengths

- Pre-specified time points rather than time ranges.[8]
- Use of guideline-recommended therapies with an active comparator group.[1,3,4]
- Higher utilization of oral vancomycin rather than fidaxomicin reflective of clinical practice [3,4]
- Collection of post-inclusion antibiotic use to assess for differences between treatment groups

Limitations

- Risk of selection bias with manual propensity-matching
- rCDI confirmed with nucleic acid testing; some of the cases may have been patients with colonization
- Not powered to detect difference in mortality
- Variances in levels of care: FMT + SOCp treated by ID providers vs. variety of providers in SOCp group

CONCLUSIONS

- Patients treated with FMT plus SOCp had a lower rate of rCDI at all pre-specified time points as well as a longer time to recurrence. No differences in all-cause mortality at all pre-specified time periods between treatment groups were observed.
- FMT in addition to SOCp significantly reduced the rate of rCDI as well as the time to recurrence compared to SOCp alone.

DISCLOSURES

- The authors of this poster presentation have no financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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